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LOWER SPENDING, HIGHER RETURNS:

Aligning performance incentives to accelerate a 21st century utility model

By Peter Kind, Energy Infrastructure Advocates, LLC and Doug Lewin, CLEAResult

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Executive summary

The regulated monopoly business model for electric utilities worked exactly as intended: It supported large capital flows into a new industry and enabled nearly ubiquitous availability of electric supply. Electrification was named by the National Association of Engineers as the greatest achievement of the 20th century, ahead of cars, computers, phones, radio, TV and highways. Without the regulated monopoly business model, mass electrification would have taken far longer and might never have come to pass.

But this industry model, once so perfectly matched to meet the needs of our nation, is no longer aligned with evolving customer, market and policy objectives. In a 2015 survey, 86 percent of utility executives in North America said the market model was either broken or breaking and that the need for change was either urgent or quickly becoming urgent.[1]

Our survey of Wall Street analysts reveals that a clear pathway to a 10 percent increase in earned returns on equity...would positively impact shareholder value.

The flat, declining or historically low growth of sales of kilowatt hours, or kWh, are responsible for much of the disruption experienced with the current industry model. Sales of electricity rose between 5 to 10 percent per year up until the 1970s, slowing to 2 to 3 percent in the 1980s and 1990s, and leveling off to less than 1 percent since the turn of the century.[2] In what can be fairly characterized as rational financial behavior, many utilities have resisted gains in energy efficiency, or EE: Who wants to sell less of their product and make less money in the process?

Beginning late in the 20th century, and picking up in the 21st, regulators began to adopt ratemaking variants that removed disincentives to promote EE. Decoupling and lost revenue adjustment mechanisms guaranteed revenue even if EE efforts reduced sales. Regulators then began to add on performance incentive mechanisms, or PIMs[3], to give additional profit motive for increasing EE. But these incentives typically result in less than 1 percent of operating income. These bonuses are important to utilities, but in most cases, they aren't sufficient to make a meaningful impact on shareholder value.

Customers want the lower bills that come from EE. Utilities want their customers to be happy, but they cannot responsibly forgo earning opportunities for their shareholders. Regulators want lower costs and lower emissions. Utilities are increasingly emphasizing customer satisfaction, engagement and empowerment. Efficiency can deliver on all counts, producing positive outcomes for customers, utilities and policymakers alike.

Our survey of Wall Street analysts reveals that a clear pathway to a 10 percent increase in earned returns on equity, or ROE, from performance incentives would positively impact shareholder value. This increase is roughly equal to a 1 percent increase in ROE. The current performance incentives are important but insufficient to motivate boards of directors and utility executives to drive the shift in culture, behavior and motivation to pursue additional EE measures. If stakeholders worked together, they could devise incentive programs that align interests so that all parties win. For example, lower costs and higher returns, less emissions and more clean energy benefit consumer advocates, policymakers, service providers, utilities and, most importantly, customers. These changes can be phased in to co-exist with traditional cost of service regulation, but the performance incentives need to be robust enough to change utilities' priorities.

[1]PwC Global Power & Utilities Survey 2015. pwc.com/gx/en/industries/energy-utilities-mining/power-utilities/global-power-and-utilities-survey/download-the-survey.html

[2]Energy Information Administration. "Annual Energy Outlook 2014."

[3]Performance Incentive Mechanisms (PIMs) take many different forms. They are sometimes referred to as shared savings mechanisms, ROE adders, earnings incentive mechanisms, earnings adjustment mechanisms and more.

Limited empirical evidence exists as to how large an incentive needs to be to accelerate adoption of EE and other distributed energy resources, or DERs. In order to incent new infrastructure, we can look to electric transmission companies, which have recently earned between 1 and 2.25 percent higher ROE than the average transmission and distribution utility (equaling a 10 to 20 percent increase). Utilities with this kind of added incentive trade, at a 10 to 25 percent premium, compared to traditional utilities, providing evidence that shareholder value can be increased from additional ROE.

The objective of this paper is to propose and demonstrate that by providing appropriately structured and sufficiently compensated performance incentives, we can align stakeholder interests. Overall, customer spending, revenue and even operating income for utilities can decrease, while ROE and shareholder value can increase: lower investment spending, but higher earned returns. A regulatory and utility business model so oriented would incent utilities to put a higher focus on increasing customer satisfaction, lowering system costs and accelerating the shift to clean energy.[1] ■

Introduction

Our electric utility model has served our society well from the industry's inception to full electricity deployment. In recent years, the objectives of customers and public policy have evolved in a new direction. The highest priority for customers and policymakers remains reliable and affordable energy, but there is increasing and compelling interest to employ a 21st century utility model: enhancing customer engagement, promoting more efficient use of our utility system, improving resiliency and deploying cleaner resources. Our current utility model rarely incents these goals.

The predominant regulatory model for U.S. electric utilities is based on "cost of service." This refers to the amount of money needed to build, operate and maintain facilities, cover expenses and earn a reasonable profit. Recovery is typically based on volume of energy sold (kWh). In this model, utilities are financially incented to increase rate base—that is, invest capital in utility assets and encourage consumption. This is both how earnings grow and how the financial markets reward performance.[2] But in an environment in which customer engagement, increased efficiency and load management is desired, while distributed resources may provide more resilient solutions at a lower cost, customer objectives and utility financial considerations no longer align.

The use of performance incentives can be deployed in many applications, including safety and reliability. This paper focuses specifically on performance incentives designed to engage customers and accelerate the deployment of efficiency and other solutions based on DERs. For the purposes of this paper, DERs include EE, demand response, or DR, system load optimization, distributed generation, energy storage, microgrids and local distribution system optimization.

The support for customer empowerment and a cleaner energy supply has become increasingly prevalent. Practically every state has sponsored EE programs. Renewable portfolio standards, or RPS, have been adopted in 29 states and energy efficiency resource standards, or EERS, are implemented in 26 states. Utilities and policymakers practically everywhere are actively seeking ways to increase customer satisfaction and keep energy affordable and reliable. EE does all of the above. The momentum is significant, but not significant enough to reach the massive potential of cost-effective efficiency. ■

[1]For more information on regulatory structures that support increasing levels of energy efficiency and other distributed energy resources, see Lawrence Berkeley National Laboratory's Future Electric Utility Regulation series and America's Power Plan's curated collection of reports on Ratemaking and Utility Business Models.

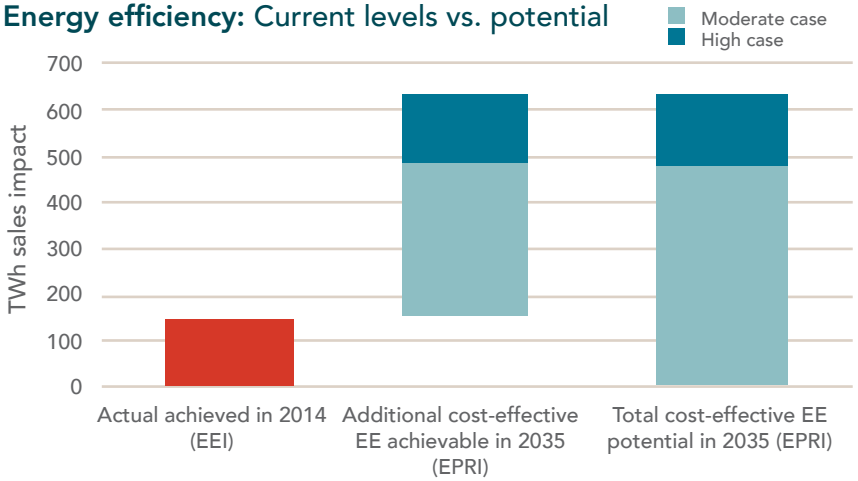
[2]This paper is focused on investor-owned utilities. Public power entities do not have investors and shareholders, however, many of the principles of the 21st electric utility model still apply. Public power utilities interested in increasing customer satisfaction and energy efficiency should consider adopting ratemaking variants that remove disincentives to those goals. For more, see Electricity Journal. Decoupling for Municipally Owned Utilities: Innovation in Southern California by Xue, Sullivan, et al, 2014.

The challenge in realizing the market potential for efficiency and other DERs

There is a consistent theme in EE potential studies: EE penetration could be far greater.[1] A 2015 study by the Edison Foundation on the impact of EE at a national level concluded that EE is increasing, but amounted to only 4.1 percent of all electric sales in 2014.[2]

The market potential for enhanced EE is significant. A 2014 report by the Electric Power Research Institute, or EPRI, titled "US Energy Efficiency Potential Through 2035", concluded that the achievable efficiency potential[3] (discounted to reflect market constraints) for reduction in electricity consumption by 2035 ranges from 11 to 14 percent. According to the U.S. Energy Information Administration, such a reduction would reduce projected electricity growth from 0.72 percent per year to a range between 0.2 and 0.36 percent per year. This would also support a **reduction** in peak demand by 11 to 16 percent by 2035 (or up to 117 gigawatts)[4] and reduce required incremental, peak serving, power generation resources. **This suggests a cost-effective, achievable potential increase of 300 percent in efficiency adoption relative to current levels.**[5]

Energy efficiency: Current levels vs. potential



Edison Electric Institute. *Electric Utility Customer Funded EE Savings, Expenditures, and Budgets (2014).*
Electric Power Research Institute. *US EE Potential Through 2035.*

EE penetration could be far greater. EE is increasing, but amounted to only 4.1 percent of all electric sales in 2014.

[1]For a compilation of energy efficiency studies, see DOE's Energy Efficiency Potential Studies Catalog.

[2]Edison Foundation Institute for Electric Innovation, "Electric Utility Customer-Funded Energy Efficiency Savings, Expenditures and Budgets (2014)" by Cooper and Smith, November 2015.

[3]Defined by EPRI as achievable potential "An estimate of savings attainable through actions that encourage adoption of energy-efficient technologies, taking into consideration technical, economic, and market constraints"

[4]Electric Power Research Institute, "2014 Technical Report: U.S. Energy Efficiency Potential Through 2035," April 2014.

[5]Note that this is a very conservative estimate of energy efficiency potential. Many studies, most notably McKinsey's Unlocking Energy Efficiency in the US Economy, show much higher achievable potential. This 300 percent increase is certainly not the upper bound of what is possible, but demonstrates that even conservative potential studies conclude we have not nearly attained the levels of efficiency available.

A 2015 report by the American Council for an Energy-Efficient Economy, or ACEEE, showed 1 percent customer participation in efficiency programs on average, while highlighting specific programs that over multiple-year periods reached an estimated 5 percent customer penetration.[1]

A 2016 scorecard by the ACEEE ranked the U.S. eighth place out of the largest world economies for the deployment of efficiency.[2] This energy inefficiency is a drag for the economy as a whole and for individual consumers and businesses. One study suggests that doubling energy productivity would save $1,000 per household per year, and accrue over $300 billion in savings to the U.S. economy.[3] While the scorecard found "some bright spots," it noted "the U.S. has a long way to go to stop wasting energy and achieve efficiency in all sectors. Ultimately, we must make significant progress year after year to be globally competitive and build an energy-efficient economy."[4]

There is a range of reasons cited for the U.S.' less than optimal EE results, but we contend that the lack of customer engagement is the principal impediment. The challenge in promoting customer engagement is closely linked to limited financial incentives for, and detrimental long-term financial impact on, utilities seeking increased EE measures and other DERs.

Utilities are the obvious choice to scale up EE. They have the customer load information, technical expertise, organizational infrastructure and, most importantly, the long-standing customer relationships. However, utility investors lose from DERs in the current regulatory structure. **In a 21st century utility model, utilities are provided incentives for increasing EE and other DERs and thus, will be provided the opportunity to grow their return on investment and stock market valuation.**

Today's utility PIMs[5] tend to be modest relative to the size of utilities' financial results: around 1 percent of operating income or less. When combined with lack of transparency, timeliness and sustainability, utility directors and management cannot effectively alter behavior nor meaningfully impact compensation based on today's PIMs.

[1]ACEEE, "Expanding the Energy Efficiency Pie: Serving More Customers, Saving More Energy, Through High Program Participation," by York, Neubauer, Nowak and Molina, January 2015.

[2]ACEEE, "The 2016 International Energy Efficiency Scorecard" by Kallakuri, Vaidyanathan, Kelly, and Cluett, July 2016.

[3]Rhodium Group. American Energy Productivity: The Economic, Environmental, and Security Benefits of Unlocking Energy Efficiency. February 2013

[4]ACEEE, "Energy Efficiency: Is the United State Improving?" by Hayes, Maum and Herndon, July 2013.

[5]For more on PIMs, see Synapse Energy Economics, Utility Performance Incentive Mechanisms: A Handbook for Regulators by Woolf, Whited, and Napoleon, March 2015.

Accelerating EE and DERs: Challenges and opportunity

Challenge

- Customers need support to be engaged to deploy EE and DERs.
- Utilities are adversely impacted when EE and DERs reduce loads and investment opportunities.

Solution

Provide meaningful performance incentives for utilities to increase deployment of EE and DERs.

Opportunity

- Enhance customer satisfaction (reducing their total bill, future rate increases otherwise required, and environmental emissions).
- Achieve policy objectives.
- Enhance opportunity for third-party providers.
- Enhance utility earned returns/value to investors.

While utilities promote programs to grow efficiency, we contend that properly structured and meaningfully compensated performance incentives would create the proper alignment of interests needed to:

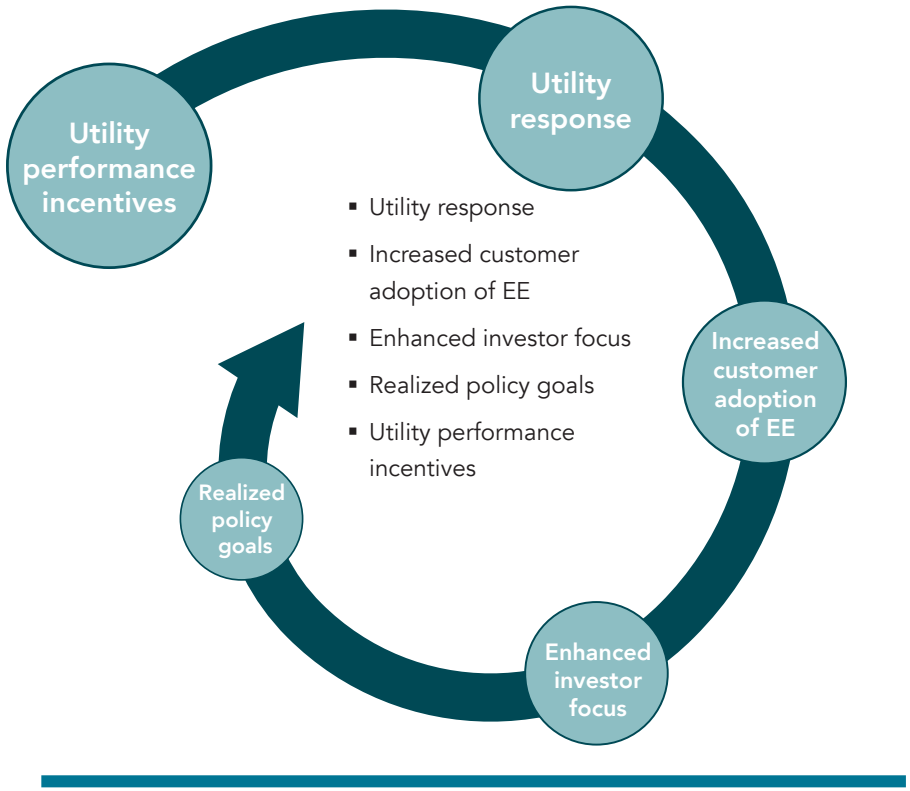
- Accelerate EE and other DERs
- Empower customers[1]
- Lower customers' bills
- Enhance utility earned returns on invested capital for adding increased value for their customers

We propose performance incentives that create an opportunity for utilities to earn a financial return for accelerating the deployment of resources that customers want and policymakers seek to incent, but which are not properly addressed by our current 20th century utility business model. As proposed herein, the higher returns on invested capital would not lead to higher revenues, spending or operating income. In fact, we would expect that utility invested capital levels would be reduced from industry forecast levels as efficiency activity reduces loads, and integrated distribution planning increases behind the meter investment opportunities relative to traditional utility distribution, transmission and generation investment (see "Illustration: Aligned Performance Incentive Example"). If performance incentives are designed well, and if a utility meets or exceeds policy goals, **utility returns on capital and equity market value would be higher through realization of performance incentives, while overall capital spending would be reduced.**

How do we unlock the potential to accelerate growth of DERs? A very important factor is the adoption of integrated distribution planning, a holistic approach to meeting distribution needs by modernizing utility interconnection, planning, sourcing and data sharing processes.[2]

One crucial element to advancing distribution planning is providing the framework for the analysis of alternatives. Another is providing economic incentives to utilities for pursuing strategies that, when appropriate, support cheaper, customer-sited solutions to distribution challenges that were previously solved by utility infrastructure investment.

Policymakers seek various goals: customer empowerment, lower bills, lower emissions, enhanced reliability and resiliency, etc. EE achieves all of those aims, and if we are seeking to accelerate EE and other DERs to achieve these goals, utilities are well positioned to drive the needed results. Policymakers will need to reorient the utility business model toward customer empowerment. As with all regulation, it is the incentives that must be reoriented.



[1]For a discussion of targeted performance incentives related to customer satisfaction, see The Brattle Group, Targeted Performance Incentives: Recommendations to the Hawaiian Electric Companies. 2014.

[2]For deeper explanation of distribution system planning, see SolarCity, "Integrated Distribution Planning," September 2015. See also Lawrence Berkeley National Lab, "Distribution Systems in a High Distributed Energy Resources Future," by De Martini and Kristov, October 2015.

Utilities need incentives in order to encourage the desired actions and behaviors. These incentives will also serve to offset the financial losses that result from solutions not compensated by the present industry model. What are the impediments to providing these incentives? First, we sense an aversion on the part of policymakers and regulators to authorize proactive business model reform that appears to benefit utilities. But without such benefits, utilities are not able to act without conflict. Utilities must consider the adverse financial impact of efficiency and DERs within the current industry model, given their fiduciary responsibility to their investors.

Thus, utilities' behavior is unlikely to be reformed toward an unfettered support of efficiency and DERs deployment without regulatory and business model reform.

The current industry model favors utility decision making toward capital deployment over customer or third party owned behind the meter solutions. Under the current model, utilities control and manage their capital assets to reduce their performance risk and earn a financial return from deploying such capital. Given a fiduciary responsibility to their investors to manage capital investment while reducing risk, the bias towards capital deployment is justified. ■

Incentivizing desired behavior

It is the fiduciary responsibility of boards, management and employees to support the best interests of investors. So. how can we expect the utility sector to effectively promote EE and other DERs while they face inherent conflicts of interest between promoting efficiency and increasing earnings per share? We suggest that mandates can achieve the levels of efficiency and DERs deployment that we have today. Cost-effective, achievable efficiency and other DERs, such as distributed solar-enhanced performance incentives, are needed to remove inherent business model conflict and accelerate the movement to a lower cost and higher value 21st century utility. ■

State of performance incentives today

There are many alternative ratemaking mechanisms currently in place. Such mechanisms include, but are not limited to, cost recovery trackers, decoupling, lost revenue adjustment mechanisms, demand charges, formula rate plans and multi-year rate plans. These mechanisms, which we support in the proper setting, are regulatory tools **that remove disincentives**. However, these mechanisms do not provide positive incentives. The focus of this paper is on performace incentives, or PIMs, and performance-based regulations, or PBRs, that provide meaningful financial inducement to utilities in order to accelerate efficiency and DERs and respond to new industry challenges and opportunities.[1]

Twenty-five states have implemented PIM structures,[2] which can be classified into four categories:

- Shared net benefits incentives—structured to earn a regulated authorized percentage of the product of efficiency program spending and the energy savings resulting from such spending (13 states)
- Energy-savings based incentives—structured to provide a percentage of savings achieved relative to a targeted goal, often containing minimum performance targets (6 states)
- Multifactor incentives—performance based on multiple metrics, some of which are not tied to efficiency performance (5 states)
- Rate of return incentives—return is allowed on efficiency spending and treated as a regulatory asset to be recovered (1 state).[3]

[1]PIMs can be used as part of performance-based regulation. According to the Brookings Institute, performance-based regulation "promotes a shift form cost of service to value of service and provides a way for utilities, customers, and broader society to meet their respective goals." Setting performance metrics beyond investment in assets connects shareholder value to the customer and rewards utilities for reaching agreed-upon policy goals. For more, see Brookings, "Why performance-based regulation is important for the electric utility transformation," by John Banks, December 3, 2015.

[2]ACEEE, "Beyond Carrots for Utilities: A National Review of Performance Incentives for Energy Efficiency" by Nowak, Baatz, Gilleo, Kushler, Molina and York, May 2015

[3]Ibid, ACEEE.

An ACEEE report determined that states with performance incentive programs had a higher degree of spending on efficiency than states without incentives (2.0 percent versus 1.4 percent of revenues), and a higher degree of EE savings (0.9 percent versus 0.5 percent of kWh sales).[1] These EE savings are insufficient results relative to the potential for efficiency savings cited earlier, which concluded there is cost- effective potential for a 300 percent increase in EE.

Utilities should not have to choose between increasing shareholder value and lowering costs for customers.

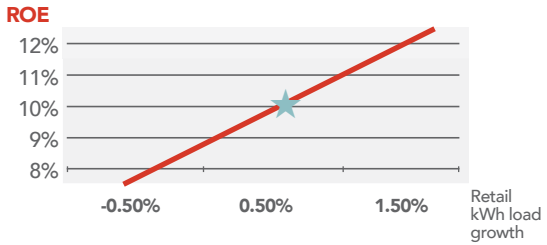
There are many potential reasons for efficiency results being below potential: Change takes time to develop; customer engagement is challenging; incentives are not effectively structured and/or incentives are not financially sufficient to reform utility behavior. A report for Ceres, "Pathway to a 21st Century Electric Utility," found that "California has been proactive in providing incentives for utilities for encouraging energy efficiency, the incentives reported in 2014 were less than 1.25 percent of pre-tax operating income for the largest utilities, or less than 0.1 percent in additional earned ROE."[2] Our survey of the broader group of PIM-approved utilities showed that PIM awards in the study year 2013 averaged less than 1 percent of pre-tax operating income.[3] That level of incentive is insufficient to encourage utilities to prioritize potentially lower cost EE/DERs solutions over higher cost infrastructure. Consequently, it is our view that current PIMs, while important to maintain current levels, will not lead to deeper savings or meaningful industry reform.

Our review of current performance incentive programs used in the utility sector suggests that in order to be more effective, incentives must be structured to align with interests of customers and policymakers (e.g., low cost, low emission, high customer satisfaction, etc.) and to remove conflicts. Utilities should not have to choose between increasing shareholder value and lowering costs for customers.

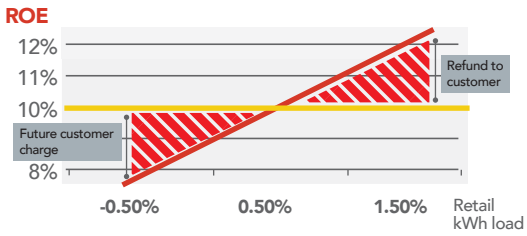
Under our current industry model, utilities only are able to earn a return on their investment. But in a 21st century value-driven model, utilities would be able to earn an incentive for actions that encourage the values identified (such as reduced customer kWh loads, peak load shaving, emissions reductions, customer engagement and satisfaction, etc.). These incentives will require thoughtful benchmarks from policymakers to ascribe an appropriate value to incentives provided.

Decoupling: An investor viewpoint

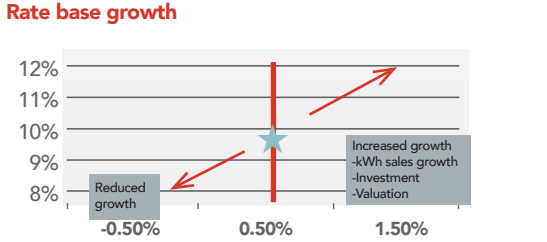
Pre-decoupling



Decoupling



Decoupling removes risk, but does not grow investment



[1]Ibid, ACEEE.

[2]Ceres, "Pathway to a 21st Century Electric Utility," by Kind, November 2015.

[3]Supra at ACEEE (#11)

Decoupling of sales volume from revenues is an important and popular tool[1] to reduce short-term earnings lag, as a result of kWh load reductions due to efficiency deployment and other DERs. But decoupling is not an elixir for utility investors. Efficiency benefits also lead to lower future investment opportunities and thereby act to reduce future growth potential for utilities and their investors. We would argue that decoupling is an essential component to address load lost to efficiency in a volumetric energy bill charge model, but does not provide a performance incentive to encourage and accelerate efficiency and other DERs. Decoupling may address short-term disincentives, but it does not provide long-term net incremental incentives.

In addition to the PIMs in place in 25 states, there are several activities underway in the U.S. and abroad that are beginning to explore PBR to meet a variety of goals, including overall utility system efficiency and operational performance, reliability, customer satisfaction and more.[2]

For example:

- Minnesota has been discussing PBR as part of their e21 Initiative.
- In Pennsylvania, Advanced Energy Economy Institute has begun a stakeholder process to address PBR for the state. Stakeholders will produce a white paper that will recommend PBR categories and potential metrics.
- New York's Reforming the Energy Vision, or REV, is developing Earning Adjustment Mechanisms, or EAMs, which are a kind of performance incentive designed to put the profit motive behind various outcomes.
- The U.K. is implementing Revenue = Incentives + Innovation + Outputs, or RIIO, which combines multi-year rate plans with incentives for innovative programs that deliver efficiency and cost savings. ■

[1]Decoupling revenue from volume happens through what is commonly referred to as decoupling, but also through lost revenue adjustment mechanisms, or LRAMs, and straight fixed variable, or SFV, rates. There are very few jurisdictions that aren't considering at least one of the three.

[2]See Lawrence Berkeley National Lab, Performance-Based Regulation in a High Distributed Energy Resources Future, by Lowry and Woolf, January 2016.

Investor considerations

A survey we conducted of leading utility sector, equity research analysts provided a consistent perspective on PIMs:

- All of the responding analysts were aware of PIMs available for California's large investor-owned utilities, but few recalled the other 20+ PIM program utilities. In addition, analysts could not recall or highlight specific utility PIM financial disclosures.
- There was low/no impact in analyst valuation of PIM effect on equity valuation, due to "negligible" and inconsistent earnings potential.
- Analysts sought a 10 percent or greater (roughly equal to 1 percent increase in ROE) long-term, potential impact on utility overall earned ROE to give valuation weight to PIMs in their assessment.[3] Importantly, they were not calling for an immediate 10 percent increase in ROE, but a pathway to achieving a 10 percent increase earned returns over time. Other factors they cited that would impact their weight of PIMs in their valuations included sustainability, transparency and timeliness.
- Suggestions made included:
  - Capitalizing EE investments and allowing earned ROE on them
- Other comments of note:
  - EE is detrimental to medium to longer-term utility earnings potential, since future capital investment opportunities are reduced.
  - One analyst highlighted that while he has not focused on PIMs, due to their modest impact on utility earnings, utilities should be seeking to assist their customers in promoting efficiency. Meaningful performance incentives may provide the motivation for utilities to increase their focus.

[3]Utility equity analysts were asked the question "what level of incentives as a percentage of total profits do you believe is necessary in order to (i) accelerate utility decision making to promote EE and DERs and (ii) attract investor focus to companies with attractive incentive performance opportunities?"

Equity analyst survey results: Observations of PIMs

	Analyst consensus	Analyst comments
Awareness of PIMs	California IOUs	~27 states with PIMs, only CA cited by all
Impact of PIMs on equity valuation	Low/None	• No meaningful impact on earnings/ROEs • Lacks consistency • Not transparent
Suggested PIM threshold to impact valuation	10% + potential impact on earned returns *(over time, not immediate)*	Plus: transparency and ongoing potential to achieve
Other suggestions on reforming PIMs		• Decoupling essential in EE and DER environment • Transparency and predictability • Sustainability without retroactive review • "Ratebasing" of EE investments or savings

The views of equity analysts are important. They represent an investor perspective on utility industry financial and investment implications. If investors view current PIM programs as providing "negligible" earnings benefit, then investors will not encourage performance under these programs from the management of investments they own.

An interesting note: It is quite difficult as an investor to identify the level of incentives earned by most utilities from EE incentive programs. In a review of financial disclosures conducted by companies earning performance incentives, and in conjunction with utility presentations to investors and Securities and Exchange Commission filings, it proved to be either difficult or impossible to determine the level of incentives earned. This is due to a confluence of factors:

- The immateriality of incentives as a reportable item
- A lack of timeliness of incentives versus the time period applied
- Substantial variability of achieving incentives to support investors with more robust disclosures

There are limited models to consider when addressing incentives to encourage behavior. One example is when utilities receive incentives to pursue long lead-time transmission projects. ROE premiums have been moving lower over the last several years. In recent Federal Energy Regulatory Commission electric transmission regulatory cases, ROE incentives for transmission investment range from 0.50 to 1.0 percent to as high as 2.25 percent (when factoring in capital structure benefits) above the average T&D ROE granted today (of around 9.5 to 10.0 percent), or a 10 to 20 percent incentive to promote transmission investment.[1] Electric utilities with significant incented interstate electric transmission investment, such as ITC Holdings, have been valued in the financial markets at a premium to traditional utilities of 10 to 25 percent. This premium valuation for incented activities provides the support for accelerating investment in such incented activities.

It is quite difficult as an investor to identify the level of incentives earned by most utilities from EE incentive programs.

[1] ITC base ROE of 10.32 percent and maximum of 11.35 percent and Eversource 10.57 percent base ROE and 11.75 percent high-end ROE vs. T&D ROE ~ 9.5 percent.

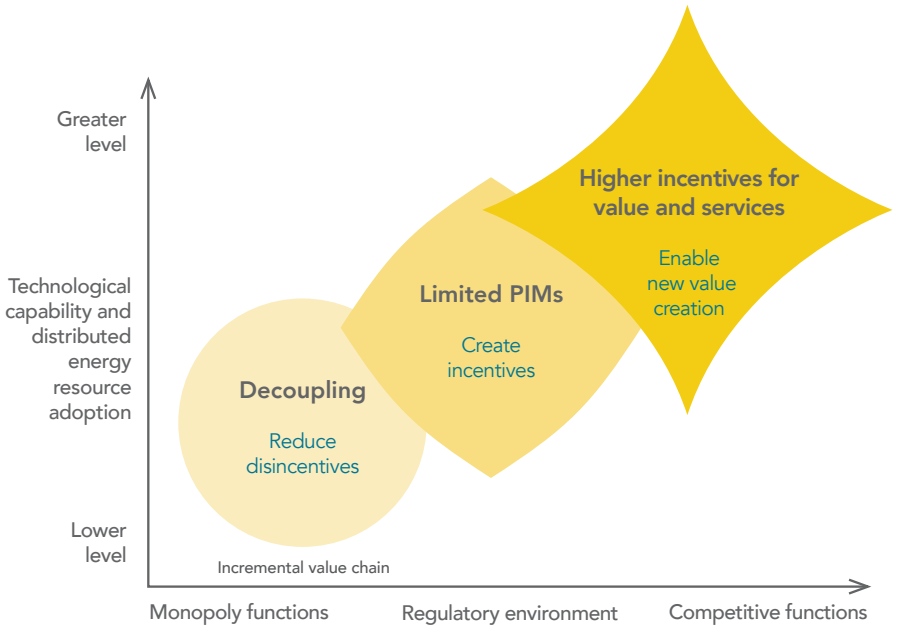
Based on these two data points—analyst survey and electric transmission incentives—discussed above, we contend that a performance incentive for "targeted actions" of at least 10 percent of total ROE is needed to align utility incentives and the objectives of policymakers and customers. This level of incentive should be sufficient to drive utilities toward a behavioral change from the old model to a newer model, particularly while the old model is still in place to support recovery of prior infrastructure investment and future investment in non-incented assets.

Since there are two distinct types of investments that we seek to incentivize, one being utility funded and the other being customer or third-party funded efficiency and DER solutions, the approach to providing these performance incentives will vary. Utility funded investment incentives may be based on an ROE premium of 10 percent for incentive qualifying investments. For third-party funded incentives driven by utility actions or programs, a more complex approach may be considered where the net present value of savings from such investment vs. utility investment is determined and standardized for all similar investments.[1] The savings would then be allocated between customer and utility to target the results desired. If a 10 percent performance incentive is sought for such investments, then the allocation would be developed to achieve that level of incentive based on the expected level of such activity. Since this proposal is intended to stimulate appropriate behaviors, it would be understood that monitoring and refining the approach will be required to achieve and manage program objectives. ■

Developing value creating performance incentives

To meaningfully accelerate adoption of efficiency and other DERs, we suggest the development of a comprehensive approach to the development of performance incentives centered on a strategic, tactical and structural framework that moves toward the enhancement of shareholder value as utilities deliver additional value to customers.

Creating financial incentive: Performance is key to incentives



Source: Rocky Mountain Institute.

[1]For an example of one analysis that compares the opportunity cost of capital investments against demand-side solutions, see Americas Power Plan, You Get What You Pay For: Moving Toward Value in Utility Compensation, Part 2 – Regulatory Alternatives, by Dan Aas & Michael O'Boyle, June 2015

We identify the necessary components as follows:

Strategic objectives of performance incentive program

- Policymakers, with input from stakeholders, outline the vision and define the objectives and goals of their jurisdictional energy system. This includes timelines, benchmarks to achieve and accountability oversight to manage the desired outcome.
- The objectives and goals should include criteria and quantitative metrics for customer empowerment, engagement, satisfaction and levels of energy efficiency attained.

Tactical components of a performance incentive program

There are a number of tactical program design issues that must be considered for a reformed PIM structure. The objective of this paper is not to recommend various tactical components, but to highlight the issues for future implementation discussions:

- Learn how to integrate performance incentives with cost of service ratemaking.
- Should performance incentives be based upon dollar level of spend-on efficiency and DERs? Or should they instead be valued based on savings created by achieved relative to goal?[1] The latter scenario seems likely with the inclusion of externalities given environmental objectives.
- Should incentives be prioritized and weighted to encourage behavior that optimizes policy objectives? These objectives include: (i) customer engagement and empowerment; (ii) peak system optimization; (iii) peak load shaving;[2] (iv) energy efficiency—which may be off-peak; and (v) improvement in energy mix, including reducing greenhouse emissions.
- How should we incent utility funded programs as opposed to utility-lead distribution system planning that encourage behind the meter solutions funded by customers or third parties? How should we quantify the value created in behind the meter programs, in particular?

[1]For an explanation of how incentives can be tied to real-world measurable results achieved, not to projected savings or differences from a counterfactual, see Americas Power Plan, Avoiding Counterfactuals in Performance Incentive Mechanisms: California as a Case Study by Robbie Orvis for Americas Power Plan.

[2]See Americas Power Plan, Designing a Performance Incentive Mechanism for Peak Load Reduction: A Straw Proposal by Michael O'Boyle.

Structural framework for all performance incentive programs

Whatever the unique components of an effective performance incentive program (e.g., supports the results sought), all programs should consider and include the following structural framework attributes to support engagement of utilities and their customers:

- Transparency and simplicity—Programs should support the efficient monitoring of results and be easy for all to understand.
- Timeliness—PIMs should strive to minimize the time frame between achieving results and confirming and awarding incentives.
- Incentives linked to specific outcomes sought—Customer empowerment, net present value, or NPV, of financial and energy savings, and improved environmental emissions are examples.
- Programs need to provide the PIM recipient (in this case the utility) with an incremental net financial benefit for achieving the incented performance vs. earnings under current cost of service model. For example, performance that increases efficiency should realize an incentive that exceeds the loss in near-term and long-term financial benefit if efficiency performance was not achieved.
- Incentives should be calibrated to focus on optimizing results (e.g., best results per dollar invested or NPV per ton of emissions abated) and structured to achieve highest NPV per dollar invested in efficiency and other DERs. For example, peak saving results may create a larger incentive than non-peak energy savings, depending on the value of carbon emissions.
- Consider application of the U.K.'s RIIO model, which introduces total expenditures, or the combination of operational expenditures, or OPEX, with capital expenditures, or CAPEX, to allow ROE on both. This encourages operating cost actions that defer capital investment by structuring an investor indifference to either operating or capital expenditures.[3]
- Incentives should be based on a sharing of resulting benefits allocated equitably between customer and utility, so that both parties are encouraged to take actions necessary to benefit from the targeted results.

[3]One example is onsite data storage vs. cloud-based services. The cloud is OPEX, while onsite utility owned servers are CAPEX. Utilities earn ROE on the servers and can only recover expenses for the cloud; this gives a bias in utility decision making for the servers, even if the cloud is cheaper, safer, more reliable, etc.

The task of developing a well-structured performance incentive program is not a simple one. It requires the collaboration of all utility stakeholders. The application of these principles will be case specific and dependent on the utility profile and issues in the specific region considering adopting performance incentives. There will be a need to apply predetermined metrics for each action to be incented, such as the resulting kWh load and environmental emission savings from each form of technology considered. Larger or case-specific situations may require special review. Obviously, regulators will have the opportunity to evaluate the performance of the programs they adopt and refine them over time based on experience gathered.

How will we incent utility capital investment vs. actions that may encourage behind the meter investment provided by customers or third parties? Under our current industry model, utilities are only able to earn a return on their investment. But in a 21st century value-driven model, utilities should be able to earn an incentive for actions that encourage the values identified (such as reduced customer kWh loads, peak load saving or emissions reductions), whether that action is a utility funded program or non-utility funded behind the meter program. These incentives will require thoughtful benchmarks from policymakers to ascribe an appropriate value to incentives provided.

Another challenge that will need to be addressed upfront is the cost of service investment recovery level (e.g., rate base) in an environment in which incentives are earned. We would argue that through the transition to a reformed ratemaking model—timeline uncertain—performance incentives can neatly live as part of a paradigm that is cost of service based. Ultimately, as new product opportunities and services are developed, the structure of the overall ratemaking model will likely be addressed.

As for cost of service investment, all dollars invested in capital assets are typically treated equally. But, if we want to accelerate clean resource investment, a standard electric pole should not be treated the same as a microgrid or a clean power generation facility. What should be the difference in return earned on clean investment facilities as opposed to traditional utility assets? The 10 to 20 percent proposal from investors or 1 to 2.25 percent premium on incented transmission investment, suggests a 100 to 200 basis point (1 to 2 percent) premium over allowed ROEs is justified. We will leave it to policymakers and stakeholders to deliberate the appropriate premium to accelerate desired behavior. In short, if you want to encourage a specific action, incent it! ■

Illustration: aligned performance incentive example

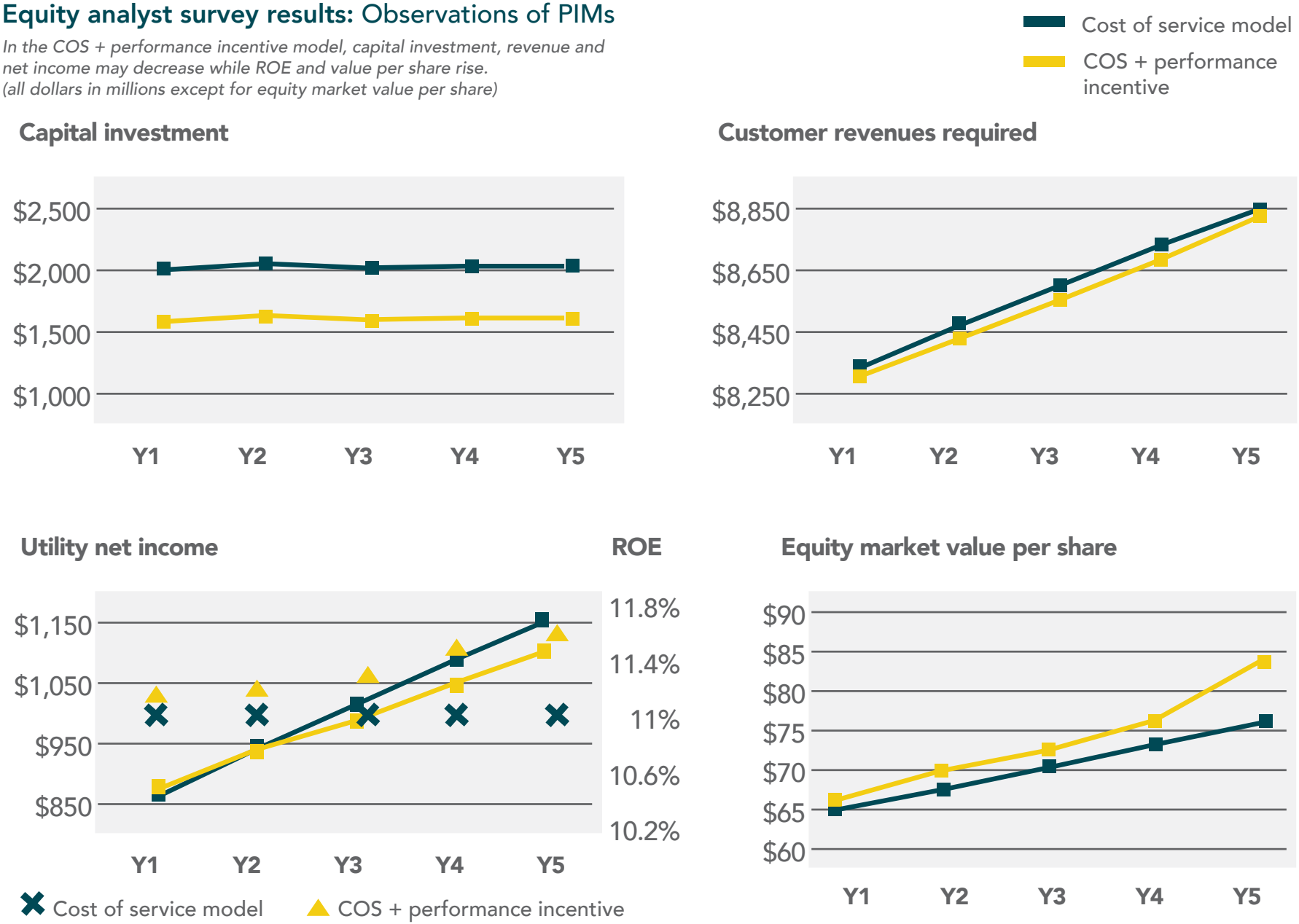
A utility seeks to increase efficiency and deploy clean energy resources, such as DERs. As part of its integrated distribution planning program, the utility identifies an alternative to building substantial distribution assets (e.g., substation expansions and circuit upgrading). Instead, it deploys localized DER strategies to defer the need for new distribution investment. The utility determines that it can reduce its overall CAPEX budget by 20 percent per year by deploying DER solutions. Customers would see a savings of 75 percent of capital expended on the 20 percent CAPEX reduction (e.g., DERs costing 75 percent less than substation solutions when factoring in the energy savings as well). Its state regulator authorizes customers to realize 67 percent of the savings and the utility to retain 33 percent of the NPV.

When this example is modeled, the following results are realized over the initial five-year time frame (see Example 1) from the performance incentive model:

- Utility capital investment declines by 20 percent over five-year illustration period.
- Revenues from customers decline by an aggregate of $230 million over the five-year period.
- Utility net income declines by a cumulative $68 million.
- ROE earned increases from 11.0 percent to 11.6 percent in year five, not quite at the 10 percent threshold sought, but approaching that level by year 10.
- Equity value per share increases by 9.4 percent from PIM case versus cost of service case.

Equity analyst survey results: Observations of PIMs

In the COS + performance incentive model, capital investment, revenue and net income may decrease while ROE and value per share rise.
(all dollars in millions except for equity market value per share)



X and triangles correspond to right y-axis, and lines correspond to left net access.

What the example illustrates is that if capital investment can be optimized to pursue approaches that operate at a lower cost, customer rates can be reduced and utility net income may be reduced. Importantly, value to equity investors may be increased as the return on the incented capital deployed is increased as performance incentives are earned. We believe this is a scenario that investors would prefer and utility boards of directors would be supportive of incentivizing management to accomplish: smart capital deployment leading to lower bills, more efficient customer use of energy and cleaner solutions and higher value to customers and investors. While there may be those that might argue with the assumptions in this hypothetical example, the point is that capital deployment that considers new policy objectives may lead to a winning opportunity for all stakeholders. ■

Conclusion

Customers' expectations and policy goals have evolved over the last several years toward significant interest in efficiency and DER deployment. In order for customers to pursue EE and seek to deploy DERs, they must be empowered. This requires education and awareness of alternative solutions and incentives to act.

Utilities seek to support their customers and policy goals toward cleaner energy, but have a natural conflict with the current industry model in which increased efficiency and other DERs translate into lower, long-term profit growth. To align interests and accelerate efficiency and DER deployment from the modest levels of today to the potential opportunity projected for the future, this paper suggests the development of meaningful performance incentives is necessary to achieve the results desired by policy, markets and customers.

Incentives for performance should be structured based on shared savings so that utilities are financially incented (e.g., earning a net benefit) for promoting and achieving EE and DER benefits for customers versus today's approach of being indifferent or under earning due to EE and DERs. If this is done, capital investment and customer bills can go down while utility earnings increase.

Utility model alternatives

	Industry model	kWh load	Capital investment	Customer bills	Utility earnings growth
20th century model	Cost of service (COS)	↑	↑	↑	↑
21st century model	COS + PIMs	↓	↓	↓	↑↑

Lower investment spending, but higher returns from performance incentives earned.

Utilities seek to support their customers and policy goals toward cleaner energy, but have a natural conflict with the current industry model in which increased efficiency and other DERs translate into lower, long-term profit growth.

While 27 states have PIMs in place, those incentives tend to be less than 1 percent of electric operating income. This is significantly why efficiency achieved is far below cost-effective potential available. To achieve the potential determined by EPRI of 11 to 14 percent of sales reduction from efficiency, we argue for increased performance incentives sufficient to change behaviors and align utility interests with those of customers' interests in reducing their total bills. Our survey of equity analysts argued for 10 percent increase in overall utility ROE from incentives to attract investor interest towards utilities with PIMs, assuming customer and policy objectives are achieved.

This paper highlighted the importance of properly aligned, structured and meaningfully sized opportunity from performance incentives that provide transparency, timeliness and alignment with the goals being sought for each supporting jurisdiction. We also demonstrated a hypothetical example where customer bills and utility earnings can be lowered, while earned ROEs and equity values can be enhanced by incentivizing optimal capital deployment. By meaningfully incentivizing efficiency and DERs, we can achieve our 21st century utility model, while enhancing value for all stakeholders. Let's get started. ■

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